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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,968	09/26/2005	Wei Sun	DRE-0179	6096
26259	7590	06/28/2007		
LICATA & TYRRELL P.C. 66 E. MAIN STREET MARLTON, NJ 08053			EXAMINER HSIEH, BRANDON	
			ART UNIT 2128	PAPER NUMBER
			MAIL DATE 06/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/540,968

Applicant(s)

SUN ET AL.

Examiner

Brandon Hsieh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 06/29/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Teoh et al. (U.S. Patent 6,730,252).

**Consider claim 1**, Teoh et al. discloses a process for manufacturing complex parts and devices (col. 6 lines 8-14, **three-dimensional (3D) bioresorbable scaffolds, FIG. 1, CAD model**) comprising:

- (a) utilizing a CAD environment to design a part or device to be created (col. 6 lines 8-14, **three-dimensional (3D) bioresorbable scaffolds, FIG. 1, CAD model**);
- (b) converting the CAD designed part or device into a heterogeneous material (col. 6 lines 8-14, **composites of PCL and ceramics (heterogeneous material : consisting of many different items)** and multi-part assembly model (col. 6 lines 33-56, **fabricating a filament for use in tissue engineering**) which can be used for multi-nozzle printing (col. 4 lines 54-57, **using nozzle to print, col. 10, table 1, have more than one nozzle (size)**) ; and

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(c) printing the designed part or device using different, specialized nozzles (**col. 4 lines 54-57, using nozzle to print, col. 10, table 1, have more than one nozzle (size)**).

**Consider claim 2**, Teoh et al. discloses the process of claim 1 further comprising using Boolean, scaling, smoothing mirroring, or other operations (**col. 5, lines 13-38, mathematically slices the conceptual model into horizontal layers**) to modify the CAD design prior to conversion into a heterogeneous material and multi-part assembly model.

**Consider claim 3**, Teoh et al. discloses the process of claim 1 wherein in step (a) data taken from MRI, CT or other patient specific data is (**col. 12, lines 47-49, CT and MRI data**) imported into the CAD environment to design the part or device to be created.

**Consider claim 4**, Teoh et al. discloses the process of claim 1 wherein a biomimetic and non-biomimetic feature is designed into the part or device (**col. 1 lines 21-51, scaffolds have multiple uses, for example, tissue replacement or having mechanical properties to match the tissue**).

**Consider claim 5**, Teoh et al. discloses the process of claim 1 wherein the part or device comprises a tissue engineering device and printing in step (d) involves direct deposition of cells or biological factors (**col. 1 lines 21-51, scaffolds is used with cells, col. 5 lines 13-37, Fused Deposition Modelling (FDM)**).

**Consider claim 6**, Teoh et al. discloses the process of claim 5 wherein direct cell deposition improves histological accuracy, cell ratios, and spatial patterning of cells in the part or device (**col. 11 lines 44-65, using FDM to make scaffolds**).

**Consider claim 7**, Teoh et al. discloses the process of claim 1 wherein the part or device produced comprises an artificial organ, a tissue scaffold (**abstract**), an artificial vasculature or channel system, or a sample for cytotoxicity testing.

**Consider claim 8**, Teoh et al. discloses the process of claim 1 wherein the part or device produced comprises a biochip, biosensor, bionic, cybernetic, mechanoactive, or a bioactive tissue scaffold (**abstract**).

**Consider claim 9**, Teoh et al. discloses the process of claim 1 wherein the part or device is used in drug delivery (**col. 2 lines 31-33, delivery of bone-forming cells**).

**Consider claim 10**, Teoh et al. discloses a multi-nozzle biopolymer deposition apparatus (**col. 4 lines 54-57, using nozzle to print, col. 10, table 1, have more than one nozzle (size), abstract, FDM**) comprising:

(a) a data processing system which processes a designed scaffold model and converts it into a layered process tool path (**col. 5 lines 13-37, tool path data with layer is use for scaffold fabrication**);

(b) a motion control system driven by the layered process tool path (**col. 5 lines 13-37, computer with software to implement FDM**); and

(c) a material delivery system comprising multiple nozzles of different types and sizes which deposits specified hydrogels (**col. 13 lines 55-67, using hydrogel**) with different viscosities thereby constructing a scaffold from the designed scaffold model (**abstract, scaffold, col. 4 lines 54-57, using nozzle to print, col. 10, table 1, have more than one nozzle (size)**).

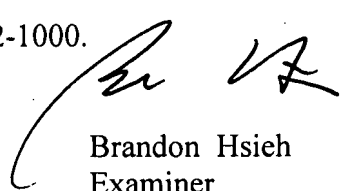
### *Conclusion*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon Hsieh whose telephone number is (571)-270-1320. The examiner can normally be reached on Monday-Friday, 7:30 AM - 5:00 PM.

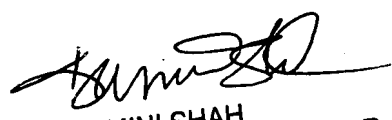
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Brandon Hsieh  
Examiner  
Art Unit 2128

BH



KAMINI SHAH  
SUPERVISORY PATENT EXAMINER